

PATENT ABSTRACTS OF JAPAN

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(54) VIRUS FREE MODULE

(57)Abstract:

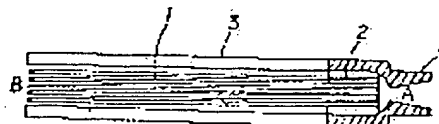
PURPOSE: To obtain a small-sized separator for separating and removing virus, especially, between a feeder having a blood preparation dissolved therein and a human body without adsorbing the protein component in the blood preparation, by using a porous hollow fiber composed of cuprammonium regenerated cellulose satisfying a specific formula.

CONSTITUTION: Cuprammonium regenerated cellulose is prepared under such manufacturing condition that virus particles blocking coefficient ϕ ; uniquely determined according to formula 1 based on a virus diameter $V(\text{nm})$, the water flow speed average pore size $D(\text{nm})$ or a membrane and a membrane thickness $T(\mu\text{m})$ becomes 3 or more, and a porous hollow fiber 1 is

formed from said cellulose. The A-part at one end of the hollow fibers 1 is embedded in a filler 2 and the B-part at the other end thereof is hermetically sealed to form a hollow fiber structure. One end of a tubular body 3 is perfectly sealed to one end part A and united with a joint part 4 mountable to a syringe. The open end part of the tubular body 3 to the external system is made present in the same plane as the position of one end part B. In use, the syringe is inserted in the joint part 4 and one end part B is directly inserted in a drug bottle receiving a blood (plasma) preparation to suck said preparation by the syringe.

Formula 1: $\phi = \frac{V^2}{D \cdot T} \times 10^3$

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PA - (ASAH) ASahi CHEM IND CO LTD

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AB - J63088007 Module comprises porous and regenerated cellulose hollow
fibres made by the copper ammonium process, the fibres satisfy the
formula

- $\phi = 0.5 \times 10 (3.01 \times 10 \text{ power } -3 V - 2.34 \times 10 \text{ power } -2 D) \times T (l)$

- where ϕ is the checking coefficient which = 3. An end (A) of the
fibre is embedded in filler and opened to the outside and the other
end (B) is sealed or embedded in the filler at the same position. The
hollow fibre structure is fitted in a tubular body opened at one end.
The end of the tubular body and that of the hollow fibre are in the
same plane, and one end side of the fibre has a joint attachable with
an injector, where V is virus gp. (nm); D is water flow velocity mean
bore (nm) and T is film thickness (micro-m).

- ADVANTAGE - The module removes viruses causing diseases without losing
major protein component in blood plasma. Time series variation of
filtration speed is small and filtering is rapid. Virus free
filtration liq. is easily recovered in the injector directly.(0/3)

IW - VIRUS FREE MODULE FLUID SEPARATE ULTRAFILTER COMPRISE POROUS HOLLOW
REGENERATE CELLULOSE FIBRE SPECIFIC CHECK COEFFICIENT FIT TUBE BODY
OPEN ONE END

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TI - Virus-free module or fluid separator for ultrafiltration etc. -
comprises porous and hollow regenerated cellulose fibres having
specific checking coefficient and fitted in tubular body open at one
end